

January 28, 1971

Dr. John R. Toxter  
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United States Atomic Energy Commission  
Washington, D.C. 20545

Dear John,

Thank you for your letter of January 22. It, and the Knox report were indeed helpful.

I have, of course, long felt that the semantic and public relations problems were paramount. But I think the AEC could do much more to clarify the situation.

I was particularly impressed that Knox gave numerical substance to the intuition that D would be a small fraction of  $D_0$ . But then why put the burden on geneticists to validate that analysis? AEC would gratify us all if it could announce the following policy, consistent with the established standards. (I assume AEC has the legal authority; or, if not, the political leverage to extract it.)

"The AEC, during the decade of the 1970's, will program nuclear energy activities so as to minimize the dose-commitment of the U.S. population to the lowest practical value. It will in any case plan to limit that commitment to less than 10 mr per capita per year, averaged over the U.S. population. We are advised by geneticists that this exposure, which is only one-tenth the natural radiation background, will not influence the mutation rate by as much as one-percent of its "normal" value, and that this is the most sensitive indicator of any adverse biological effect of radiation. 10 mr/year is, furthermore, a small part of the variation in background radiation found at different altitudes in the U.S. or resulting from different geological formations.

According to our calculations, this policy objective will be met by adherence to the existing standard that limits radiation levels to 500 mr/year at the boundaries of nuclear sites, in view of the rapid falloff of exposure with distance from radiation sources. In fact, most nuclear installations have operated a large part of the time at dose rates far below this rigorously enforced standard.

( . . . . then language on the difference between a population exposure policy of the AEC and the emission standards imposed on a given plant.)

Finally, this policy has been based on a conservative evaluation of the best available data on biological effects of radiation. It is for example more restrictive than the standards suggested by the NCRP. The AEC will continue to sustain an active program of research needed to narrow the zone of uncertainty in these calculations. The conservative approach

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we have adopted suggests that further knowledge will very likely justify an eventual relaxation of this policy which may be a desirable option if the use of nuclear fission for power continues to expand in the next century. We have, nevertheless, deemed it prudent to adopt a relatively pessimistic view in assimilating uncertainties that exist at the present time into our policies for this decade.

With the cooperation of the nuclear industry, physical and biological scientists, and concerned citizens we believe we can move forward in the use of nuclear technology to solve pressing needs for economical power without costly delay and confusion."

Sincerely yours,

Joshua Lederberg  
Professor of Genetics

JL/rr